

Application No. 10/803,805

Response to Final Rejection dated April 17, 2009 in response to
Final Office Action mailed February 19, 2009

Remarks

Claims 34 and 39-45, 52 and 54-55 have been rejected under 35 U.S.C. 103(a) as unpatentable over *Tepman* U.S. Patent No. 5,223,112 ("*Tepman*") in view of *Hasabe* et al. U.S. Patent No. 5,826,129 ("*Hasebe*").

Claims 35-38 have been rejected under 35 U.S. 103(a) as unpatentable over *Tepman* in view of *Hasebe* and further in view of *Takahashi* et al. U.S. Patent No. 5,364,219 ("*Takahashi*").

Claims 46-50 have been rejected under 35 U.S. 103(a) as unpatentable over *Tepman* in view of *Hasebe* and further in view of *Yamauchi* et al. U.S. Patent No. 6,754,554 ("*Yamauchi*").

Tepman discloses the use of a wafer handling mechanism to transfer a shutter plate that is dimensionally identical to a semiconductor wafer. The shutter plate closes an opening in a holder normally filled by a wafer to prevent coating material from contaminating the structures below the opening when a wafer is being moved, thus avoiding the need to interrupt process settings while exchanging wafers. The shutter handling mechanism that normally moves the shutter plate to and from its closed position can also be used to set the shutter plate onto a wafer arm's end effector when the arm is extended to its normal wafer pick-up position to remove and replace the shutter plate when it needs to be cleaned. This is possible, as *Tepman* states in his abstract: "Because the shutter plate is geometrically similar to the product substrate and is handled by the same lift assembly, the same robotic shuttling mechanism used to transport product substrates into and out of the chamber may be used to periodically remove and replace a used shutter plate with a new plate without shutting down the system."

Applicant uses a wafer transfer arm to transfer annular parts that are larger than a wafer into and out of a chamber for replacement. This is not suggested by *Tepman*. To supply this missing element, the Examiner cites *Hasabe*, which discloses a cylindrical shield 286 that is larger than a wafer and is moved into and out of a shielding position. *Hasabe* calls this element a "shutter". That alone appears to be the basis for the cite to *Hasabe*.

But the whole reason that *Tepman* suggests that the wafer transfer arm can be used to remove and replace a shutter plate is "because the shutter plate is geometrically similar to the product substrate and is handled by the same lift assembly...". How can the existence of a component in the *Hasabe*

device that *Hasabe* happens to also call a “shutter”, but that does not meet the criteria of being “geometrically similar to the product substrate and ... handled by the same lift assembly ...” deemed to motivate *Tepman* to ignore the reasoning he used in concluding that his “shutter” could be replaced using the wafer transfer mechanism? The condition that leads *Tepman* to conclude that he can exchange an element for service is that the element is “geometrically similar to the product substrate and is handled by the same lift assembly”, not that anything called a “shutter” could be so moved.

In other words, prior to *Tepman*, it was recognized that deposition and etch chambers contained maintenance items, or parts within the chamber that had to be replaced, cleaned or otherwise serviced, usually by removing them from the chamber and replacing or cleaning them to remove accumulated deposits or for repair of surfaces eroded by etching. These parts were not the size or shapes of the substrate wafers and were not in a position to be lifted in position for pickup by wafer transfer arms. It was only when *Tepman* provided a shield or shutter plate that had the same size and shape of a substrate wafer and located that shutter plate in a wafer pickup position that *Tepman* determined that the wafer transfer arm could be used to remove and replace the shutter plate. *Hasabe* adds nothing to *Tepman* by noting that a shutter plate need not be the same size and shape as a wafer. That was the starting point *Tepman* faced before his invention.

Perhaps the Examiner misreads *Tepman*, which is evidenced by the statement on page 3 of the Office Action that “... both *Tepman* and *Hasabe et al* reach a protective shutter over a smaller wafer, ...”. This is not correct, because in *Tepman*, “the shutter plate is geometrically similar to the product substrate”.

Applicant was the first to suggest and provide for the removal and replacement of annular chamber components that are larger than a substrate wafer using a wafer transfer arm. This was not obvious to *Tepman*, who used the wafer transfer arm to remove and replace a shutter plate only after configuring a shutter plate to have the size and shape of a substrate wafer and after locating it on the wafer lift mechanism for pickup by the arm.

Accordingly, it is submitted that the rejection of claims 34 and 39-45, 52 and 54-55 under 35 U.S.C. 103(a) as unpatentable over *Tepman* in view of *Hasebe* is not proper and should be withdrawn

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and these claims allowed. Claim 34 is the only independent apparatus claim. Accordingly, dependent claims 35-38 and 53 should also be allowed.

Claims 35-38 and 53 should be allowed in any event because of the additional features claimed in a system in which components are handled in various ways for maintenance using the wafer transfer mechanism and module. The clean room architecture for which *Takahashi* is cited does not teach those skilled in the art to assemble Applicant's integrated system.

Regarding method claims 46-50, the rejection is the same as for the apparatus claims discussed above additionally in view of *Yamauchi*. The rejection appears to be interpreting *Yamauchi* as disclosing, in the background section, the use of a higher level computer to determine a maintenance schedule. There is no suggestion, however, in *Yamauchi* of controlling the exchange of parts for maintenance in response to such a computer. It is submitted that claims 46-50 should also be allowed.

It is submitted that the claims are patentable over the cited references for the reasons discussed above. Accordingly, allowance of this application is respectfully requested.

Applicant does not believe that any fee is due in connection with this Amendment. However, if any charges or credits are necessary to complete this communication, please apply them to Deposit Account No. 23-3000.

Respectfully submitted,

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